EMI – TEST REPORT

- FCC Part 15.250, RSS-210 -

Type / Model Name : KNX-T6.1-1.2 / High-Capacity X-Tag

Product Description : Tracking Tag

Applicant : KINEXON Inc.

Address : 200 S Wacker Dr Suite 3100

CHICAGO, IL 60606, U.S.A.

Manufacturer : Kinexon GmbH

Address : Schellingstraße 35

80799 MÜNCHEN, GERMANY

Test Result according to the standards listed in clause 1 test standards:	**POSITIVE**

Test Report No. : 80115860-03 Rev2	22. September 2022 Date of issue

Deutsche Akkreditierungsstelle
D-PL-12030-01-03
D-PL-12030-01-04

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

Contents

1 TEST STANDARDS 3

2 EQUIPMENT UNDER TEST 4

2.1 Information provided by the Client 4
2.2 Sampling 4
2.3 Photo documentation of the EUT – Detailed photos see ATTACHMENT A 4
2.4 Equipment type 4
2.5 Short description of the equipment under test (EUT) 4
2.6 Variants of the EUT 4
2.7 Operation frequency and channel plan 4
2.8 Transmit operating modes 4
2.9 Antenna 5
2.10 Power supply system utilised 5
2.11 Peripheral devices and interface cables 5
2.12 Determination of worst case conditions for final measurement 5

3 TEST RESULT SUMMARY 6

3.1 Revision history of test report 6
3.2 Final assessment 7

4 TEST ENVIRONMENT 8

4.1 Address of the test laboratory 8
4.2 Environmental conditions 8
4.3 Statement of the measurement uncertainty 8
4.4 Conformity Decision Rule 9
4.5 Measurement protocol for FCC and ISED 9

5 TEST CONDITIONS AND RESULTS 12

5.1 UWB Bandwidth 12
5.2 Radiated Emissions 9 kHz to 40 GHz 15
5.3 Radiated Emissions at 1164-1240 MHz and 1559-1610 MHz 21
5.4 Peak Power radiated 25

6 USED TEST EQUIPMENT AND ACCESSORIES 27

ATTACHMENT A separate supplement

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (September 2021)

Part 15, Subpart C, Section 15.203	Antenna requirement
Part 15, Subpart C, Section 15.204	External radio frequency power amplifiers and antenna modifications
Part 15, Subpart C, Section 15.207	Conducted limits
Part 15, Subpart C, Section 15.209	Radiated emission limits, general requirements
Part 15, Subpart C, Section 15.250	Operation of wideband systems within the band 5925-7250 MHz

Industry Canada – Radio equipment standards

RSS-Gen, Issue 5 + A1 + A2, March 2019	General Requirements for Compliance of Radio Apparatus
RSS-210, Issue 10, December 2019	Licence-Exempt Radio Apparatus: Category I Equipment
ANSI C63.10: 2013	Testing Unlicensed Wireless Devices
ETSI TR 100 028 V1.3.1: 2001-03	Electromagnetic Compatibility and Radio Spectrum Matters (ERM); Uncertainties in the Measurement of Mobile Radio Equipment Characteristics—Part 1 and Part 2

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2 EQUIPMENT UNDER TEST

2.1 Information provided by the Client

Please note, we do not take any responsibility for information provided by the client or his representative which may have an influence on the validity of the test results.

2.2 Sampling

The customer is responsible for the choice of sample. Sample configuration, start-up and operation is carried out by the customer or according his/her instructions.

2.3 Photo documentation of the EUT – Detailed photos see ATTACHMENT A

2.4 Equipment type

portable wideband system

2.5 Short description of the equipment under test (EUT)

The KINEXON tracking tag facilitates tracking of objects with a KINEXON RTLS system (Real Time Locating System).

Number of tested samples:	2
Serial number:	256443
	260919
Firmware version:	production_tate_xtag_workertag_v5

2.6 Variants of the EUT

There are no variants.

2.7 Operation frequency and channel plan

The operating frequency band is 5925 MHz to 7250 MHz.

Channel plan:

Channel number	f_c (MHz)
Channel 5	6489.6

2.8 Transmit operating modes

Modulation: variable pulse position modulation (PPM) in combination with binary phase shift keying (BPSK).

Data rate: 6.8 Mbit/s

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2.9 Antenna

The following antennas shall be used with the EUT:

Number	Characteristic	Model number	Plug	f-range (GHz)	Gain at 6.5 GHz (dBi)
1	Omni	Decawave WB001	None (PCB)	3.5 – 7.0	3.7

2.10 Power supply system utilised

Power supply voltage (operating) : 3.1 V DC (internal battery)
Power supply voltage (nominal) 3.0 V DC

2.11 Peripheral devices and interface cables

The following peripheral devices and interface cables are connected during the measurements:

- --- Model : ---

2.12 Determination of worst case conditions for final measurement

Measurements are made in all three orthogonal axes with horizontal and vertical antenna positions to determine the worst case condition.

2.12.1 Test jig

No test jig is used.

2.12.2 Test software

No special test software is used. The EUT starts with continuous transmission as soon as the internal battery is connected.

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3 TEST RESULT SUMMARY

Wideband device using digital modulation:

Operating in the 5925 MHz - 7250 MHz band:

FCC Rule Part	RSS Rule Part	Description	Result
15.207(a)	RSS-Gen, 8.8	AC power line conducted emissions	not applicable *1
15.250(b)	RSS-210, Annex K, K2	Bandwidth of the fundamental emission	passed
---	RSS-Gen, 6.7	Occupied bandwidth (99 %)	passed
15.209(a) 15.250(c)	RSS-Gen, 8.9 RSS-210, Annex K, K3(a)	Radiated Emissions 9 kHz to 40 GHz	passed
15.250(d)	RSS-210, Annex K, K3(b)	Radiated Emissions at 1164-1240 MHz and 1559-1610 MHz	passed
15.250(d)	RSS-210, Annex K, K3(c)	Peak Power radiated	passed
15.203 15.204	---	Antenna requirement	passed *2

*1: The EUT is battery powered and cannot be connected to the public utility (AC) power line.
*2: The EUT uses an internal PCB antenna. No other antenna can be connected to the EUT. Therefor, the requirements are regarded as fulfilled.

3.1 Revision history of test report

Test report No	Rev.	Issue Date	Changes
80115860-03	0	09 September 2022	Initial test report
80115860-03	1	19 September 2022	Applicant changed on page 1 of 27
80115860-03	2	22 September 2022	Correction of IC Certification Number in heading line

The test report with the highest revision number replaces the previous test reports.

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

FCC ID: 2ALC5-KNX-HCTAG1 **IC: 25557KNX-HCTAG1**

3.2 Final assessment

The equipment under test fulfills the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample	:	acc. to storage records
Testing commenced on	:	08 August 2022
Testing concluded on	:	12 August 2022

Checked by:

Klaus Gegenfurtner
I confirm the correctness and integrity of this document
2022.09.22 13:54:56 +02'00'

Klaus Gegenfurtner
Teamleader Radio

Tested by:

I am the author of this document
2022.09.22 13:46:47 +02'00'

Franz-Xaver Schrettenbrunner
Radio Team

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15 - 35 °C
Humidity:	30 - 60 %
Atmospheric pressure:	86 - 106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor k = 2. The true value is located in the corresponding interval with a probability of 95 %. The measurement uncertainty was calculated for all measurements listed in this test report on basis of the ETSI Technical Report TR 100 028 Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1 and Part 2. The results are documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	± 3.29 dB
20 dB Bandwidth	Center frequency of EUT	95%	$\pm 2.5 \times 10^{-7}$
99% Occupied Bandwidth	Center frequency of EUT	95%	$\pm 2.5 \times 10^{-7}$
Radiated Spurious Emissions	9 kHz to 30 MHz	95%	± 3.53 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	± 3.71 dB
Radiated Spurious Emissions	1000 MHz to 10000 MHz	95%	± 2.34 dB
Peak conducted output power	902 MHz to 928 MHz	95%	± 0.35 dB
Conducted Spurious Emissions	9 kHz to 10000 MHz	95%	± 2.15 dB

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4.4 Conformity Decision Rule

The applied conformity decision rule is based on ILAC G8:09/2019 clause 4.2.1 Binary Statement for Simple Acceptance Rule (w = 0).
Details can be found in the procedure CSA_B_V50_29.

4.5 Measurement protocol for FCC and ISED

4.5.1 General information

CSA Group Bayern GmbH is recognized as wireless testing laboratory under the CAB identifier:

FCC: DE 0011
ISED: DE0009

4.5.2 General Standard information

The test methods used comply with ANSI C63.10 - "Testing Unlicensed Wireless Devices".

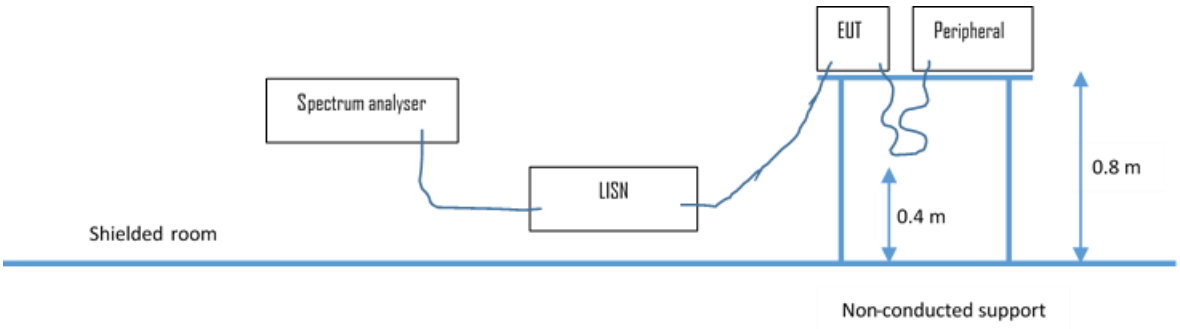
4.5.2.1 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions.

4.5.3 Details of test procedures

4.5.3.1 Conducted emission

Test setup according ANSI C63.10



The final level, expressed in dBμV, is arrived at by taking the reading directly from the Spectrum analyser. This level is compared to the limit.

To convert between dBμV and μV, the following conversions apply:

dBμV = 20(log μV)
μV = Inverse log(dBμV/20)

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection and a Line Impedance Stabilization Network (LISN) with 50 Ω / 50 μH (CISPR 16) characteristics. The receiver is protected by means of an impedance matched pulse limiter connected directly to the RF input. Table top equipment is placed on a non-conducting table 80 centimetres above the floor and is positioned 40 centimetres from the vertical ground plane (wall) of the screen room. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emission is re-measured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

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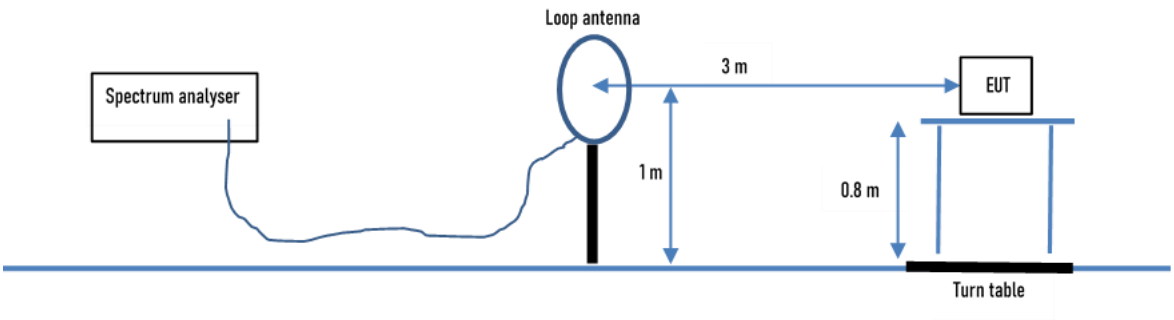
4.5.3.2 Radiated emission

4.5.3.2.1 OATS1 test site (9 kHz - 30 MHz):

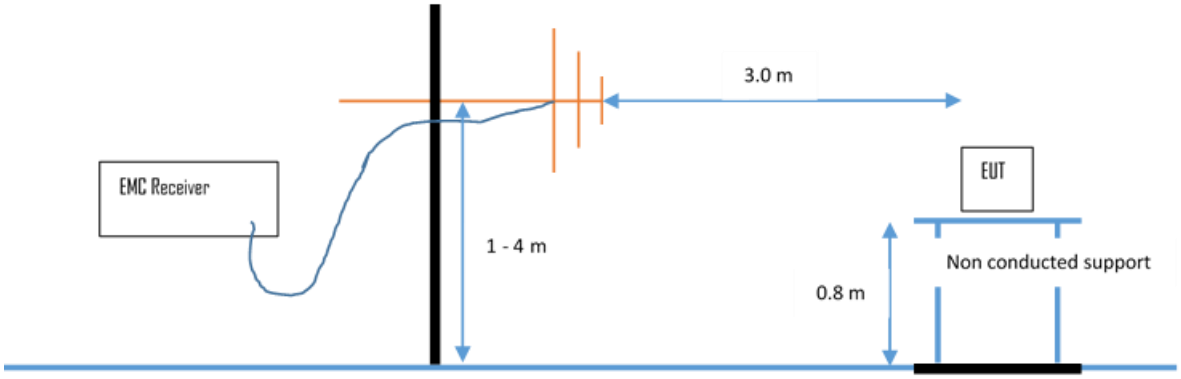
Test setup according ANSI C63.10



Emissions from the EUT are measured in the frequency range of 9 MHz to 30 MHz using a tuned receiver and a calibrated loop antenna. Table top equipment is placed on a 1.0 X 1.5 m non-conducting table 80 centimetres above the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screened room located outside the test area. The antenna is positioned 3, 10 or 30 metres horizontally from the EUT and is repeated vertically. To locate maximum emissions from the test sample the antenna is varied along the site axis and the EUT is rotated 360 degrees.

4.5.3.2.2 OATS1 test site (30 MHz - 1 GHz):

Test setup according ANSI C63.10.



Spurious emissions from the EUT are measured in the frequency range of 30 MHz to 1000 MHz using a tuned receiver and appropriate broadband linearly polarised antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection. Table top equipment is placed on a 1.0 X 1.5 m non-conducting table 80 centimetres above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screened room located outside the test area. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 metres and the EUT is rotated 360 degrees. The final level in dBµV/m is calculated by taking the reading from the EMI receiver (Level dBµV) and adding the correction factors and cable loss factor (dB). The FCC limit is subtracted from this result in order to provide the limit margin listed in the measurement protocol.

The resolution bandwidth setting:
30 MHz – 1000 MHz: RBW: 120 kHz

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	-	Limit (dBµV/m)	=	Delta (dB)
719.0	75.0	+	32.6	=	107.6	-	110.0	=	-2.4

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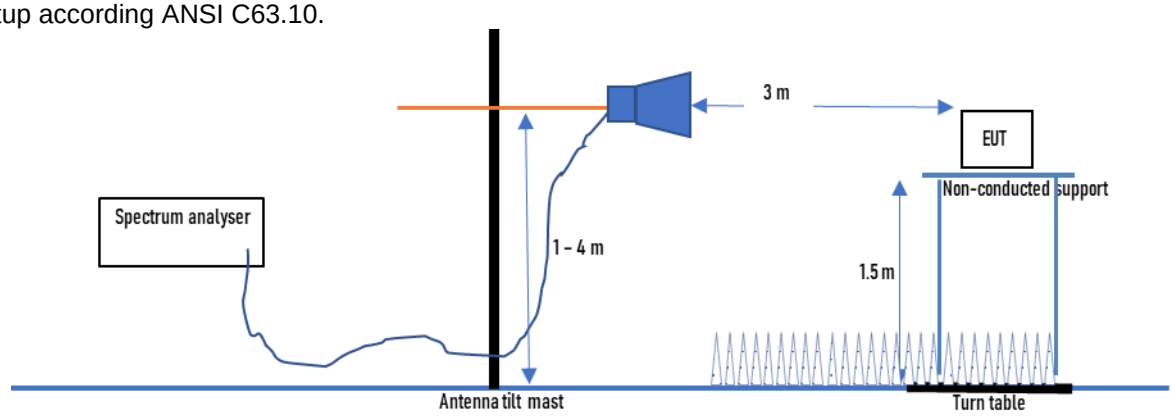
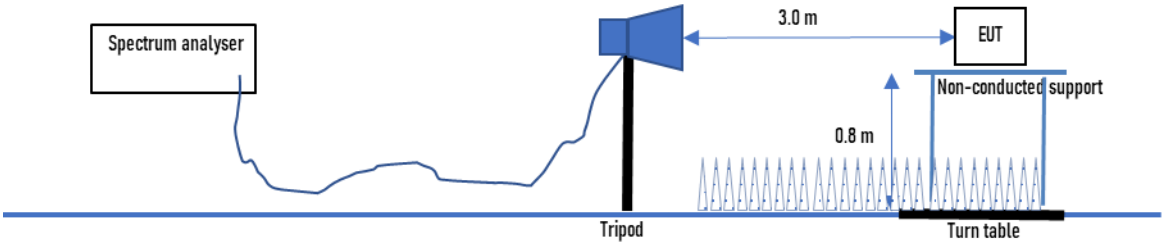
4.5.3.2.3 Anechoic chamber 1 (1000 MHz – 18000 MHz)

Test setup according ANSI C63.10.



Radiated emissions from the EUT are measured in the frequency range 1 GHz up to 18 GHz as specified in 47 CFR Part 15, Subpart A, Section 15.33, using a spectrum analyser and appropriate linearly polarized antennas. Table top equipment is placed on a non-conducting table, 1.5 metre above the ground plane. The turntable is fully covered with the appropriate absorber (Type VHP-12). Any controlling device is positioned such that it does not significantly influence the measurement results. Interconnecting cables that hang closer than 40 cm to the ground plane are folded back and forth in the center, forming a bundle 30 cm to 40 cm long. Measurements are made in in three orientations of the EUT and the horizontal and vertical polarization planes of measurement antenna in a fully anechoic room. The measurement antenna is adjusted and the EUT orientated to permit the measurement of the maximum emission from the EUT. The conditions determined as worst-case will then be used for the final measurements.

4.5.3.2.4 Anechoic chamber 1 (18 GHz – 40 GHz)



Emissions from the EUT are measured in the frequency range 18 GHz up to 40 GHz as specified in 47 CFR Part 15, Subpart A, Section 15.33, using a spectrum analyser and appropriate linearly polarized antennas. Table top equipment is placed on a non-conducting table, 0.8 metre above the ground plane. The turntable is fully covered with the appropriate absorber (Type VHP-12). Any controlling device is positioned such that it does not significantly influence the measurement results. Interconnecting cables that hang closer than 40 cm to the ground plane are folded back and forth in the center, forming a bundle 30 cm to 40 cm long. Measurements are made in in three orientations of the EUT and the horizontal and vertical polarization planes of measurement antenna in a fully anechoic room. The measurement antenna is adjusted and the EUT orientated to permit the measurement of the maximum emission from the EUT. The conditions determined as worst-case will then be used for the final measurements. Where appropriate, the test distance may be reduced in order to detect emissions under better uncertainty. The limit are adopted.

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

5 TEST CONDITIONS AND RESULTS

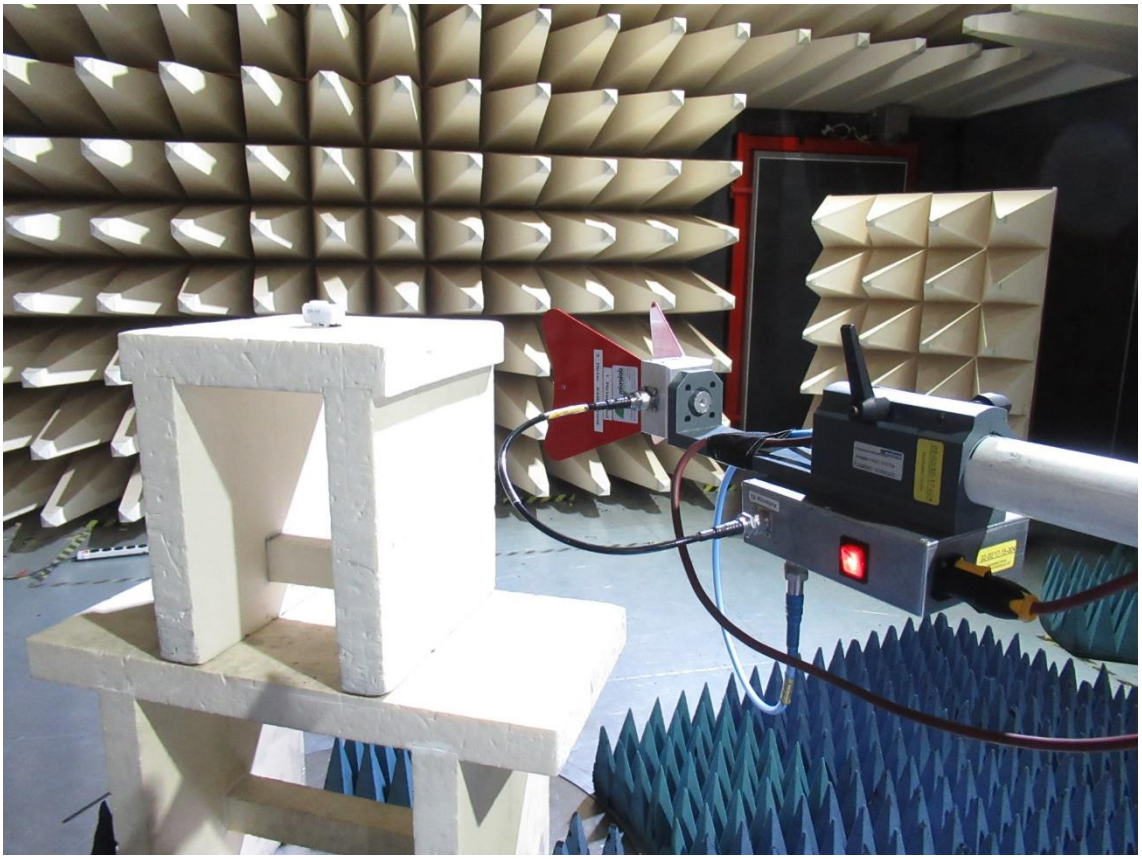
5.1 UWB Bandwidth

For test instruments and accessories used see section 6 Part **CPR 3**.

5.1.1 Description of the test location

Test location: Anechoic chamber 1

5.1.2 Photo documentation of the test set-up



5.1.3 Applicable standard

According to FCC Part 15, Section 15.250(a):
The −10 dB bandwidth of a device operating under the provisions of this section must be contained within the 5925-7250 MHz band under all conditions of operation including the effects from stepped frequency, frequency hopping or other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage.

According to FCC Part 15, Section 15.250(b):
The −10 dB bandwidth of the fundamental emission shall be at least 50 MHz. For transmitters that employ frequency hopping, stepped frequency or similar modulation types, measurement of the −10 dB minimum bandwidth specified in this paragraph shall be made with the frequency hop or step function disabled and with the transmitter operating continuously at a fundamental frequency following the provisions of §15.31(m)

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5.1.4 Description of Measurement

The measurement was performed radiated at a distance of 1 m. The bandwidth was measured at an amplitude level reduced from the reference level of a modulated channel by a ratio of -10 dB.

Spectrum analyser settings:
RBW: 1 MHz, VBW: 3 MHz, Detector: Peak

5.1.5 Test result

channel	lowest frequency f_L (MHz)	highest frequency f_H (MHz)	permitted frequency range (MHz)	UWB bandwidth (MHz)	required UWB bandwidth (MHz)	result
5	6261.7	6712.7	5925 - 7250	451.0	> 50	passed

Limit according to FCC Part 15, Section 15.250(b):
The −10 dB bandwidth of the fundamental emission shall be at least 50 MHz.

Limit according to RSS-210 Annex K, K.2(b):
The 10 dB bandwidth of the device shall be at least 50 MHz and less than 500 MHz.

The requirements are **FULFILLED.**

Remarks: For detailed test results please refer to following test protocols.

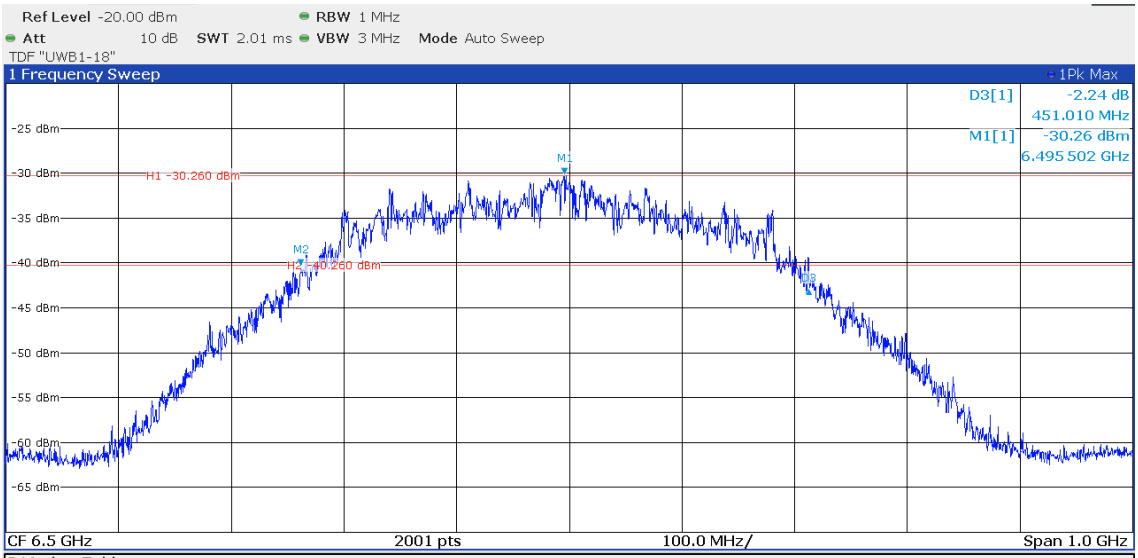
Tests are performed with sample 260919.

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

FCC ID: 2ALC5-KNX-HCTAG1 **IC: 25557KNX-HCTAG1**

5.1.6 Test protocols EBW

Channel 5

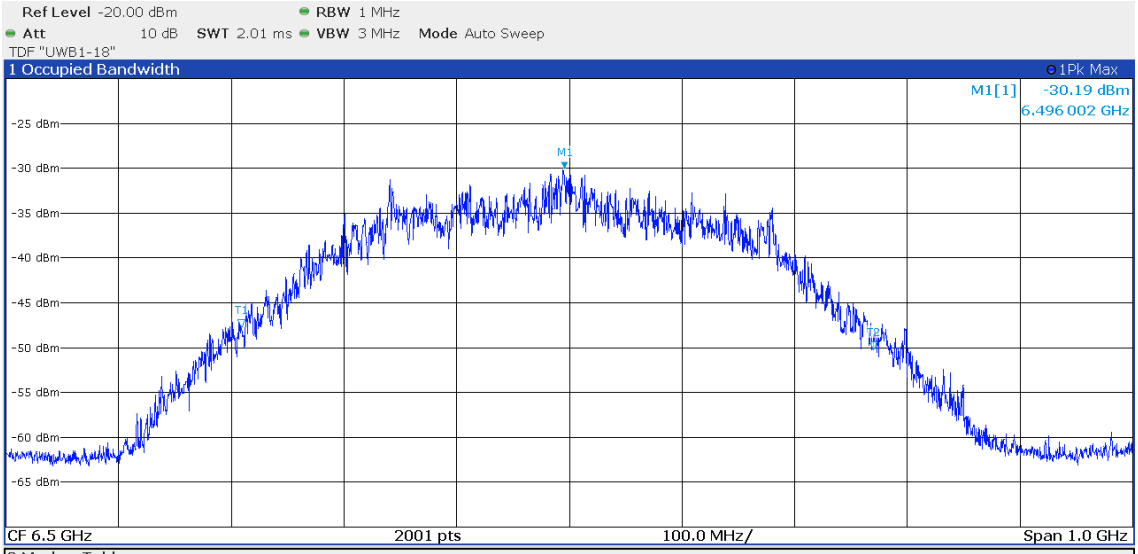


2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	**6.495 502 GHz**	**-30.26 dBm**		
M2		1	**6.261 72 GHz**	**-40.48 dBm**		
D3	M2	1	**451.01 MHz**	**-2.24 dB**		

5.1.7 Test protocols OBW 99%

Channel 5



2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	**6.496 002 GHz**	**-30.19 dBm**	Occ Bw	**560.614 405 839 MHz**
T1		1	6.208 916 GHz	-47.81 dBm	Occ Bw Centroid	6.489 223 579 GHz
T2		1	6.769 531 GHz	-50.23 dBm	Occ Bw Freq Offset	-10.776 420 906 MHz

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

5.2 Radiated Emissions 9 kHz to 40 GHz

For test instruments and accessories used see section 6 Part **SER 2** and **SER 3**.

5.2.1 Description of the test location

Test location: OATS 1
Test location: Anechoic chamber 1

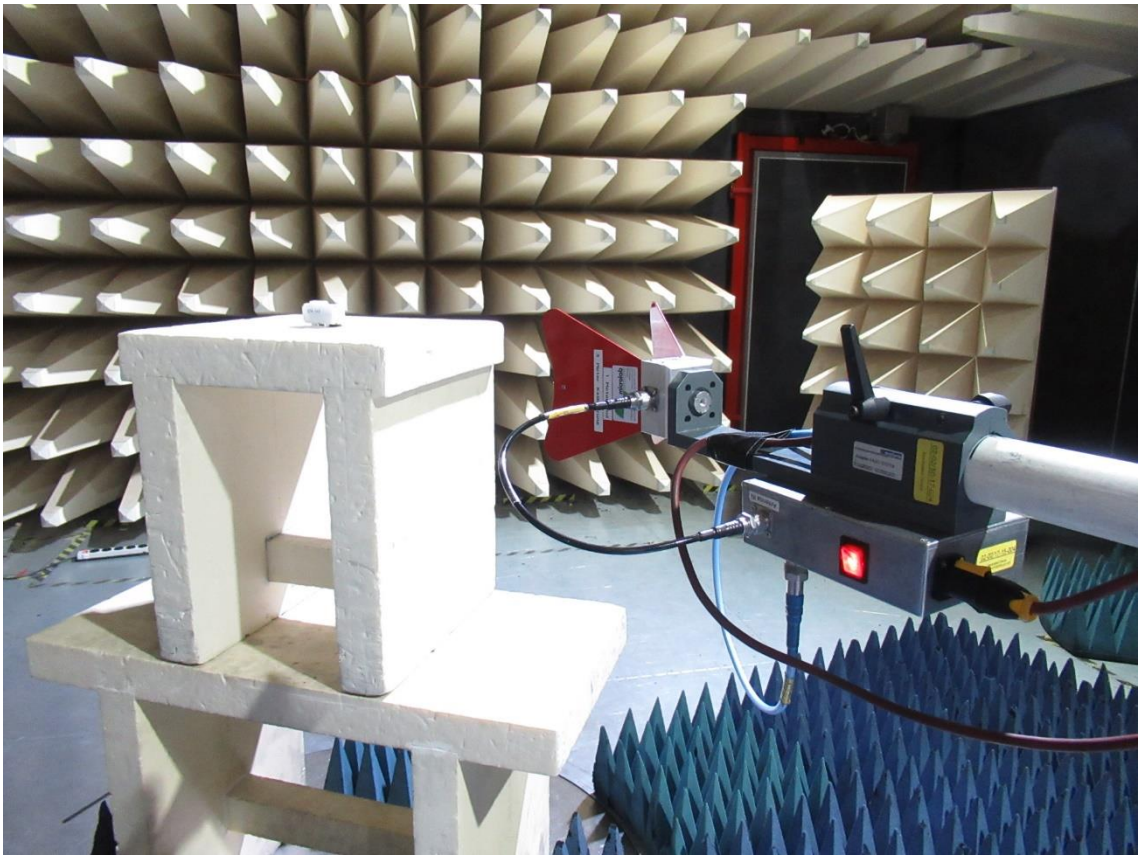
5.2.2 Photo documentation of the test set-up

30 MHz – 960 MHz

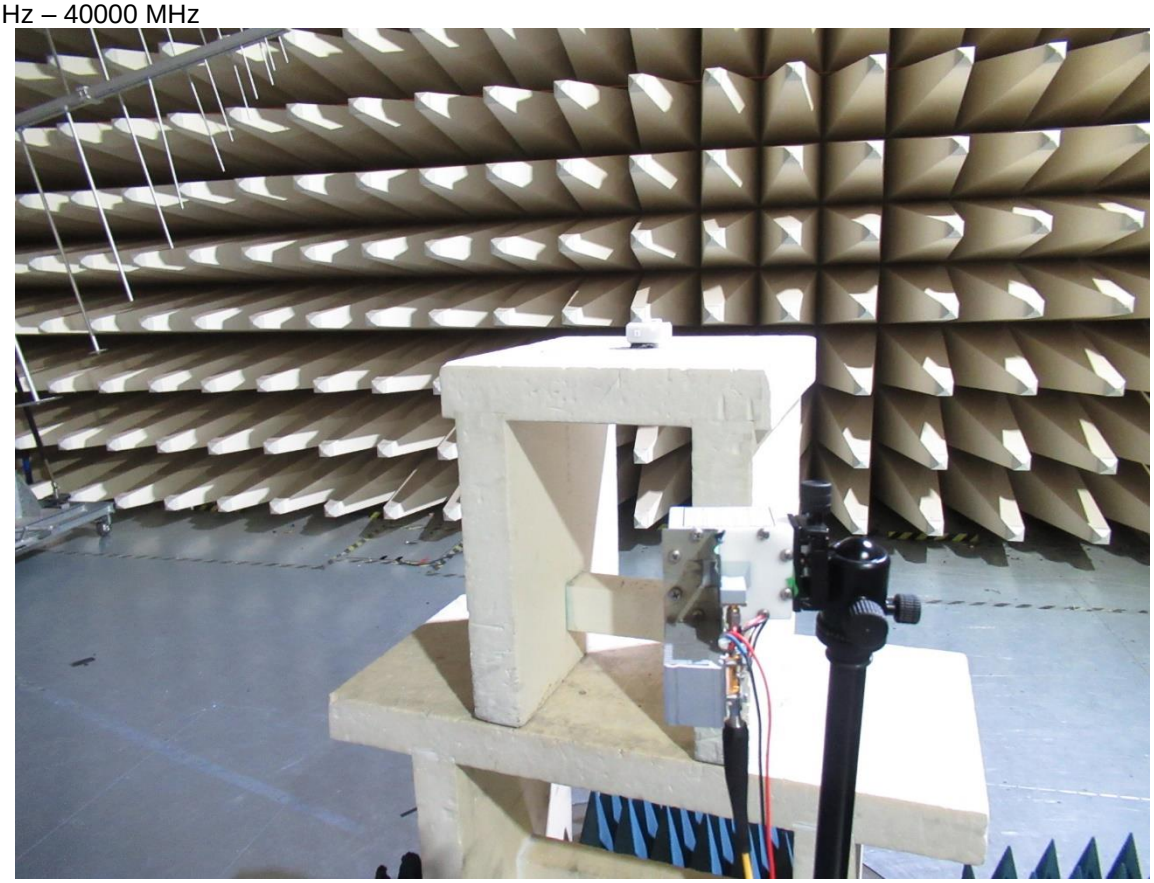
The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

FCC ID: 2ALC5-KNX-HCTAG1 **IC: 25557KNX-HCTAG1**

960 MHz - 18000 MHz



18000 MHz – 40000 MHz



The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

5.2.3 Applicable standard

According to FCC Part 15, Section 15.250(d):
Radiated emissions at or below 960 MHz shall not exceed the emission levels in §15.209. The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following RMS average limits based on measurements using a 1 MHz resolution bandwidth.

5.2.4 Analyser settings

9 kHz – 150 kHz	RBW: 200 Hz			
150 kHz - 30 MHz	RBW: 9 kHz			
30 MHz – 960 MHz	RBW: 120 kHz	Detector: QP		
960 MHz – 40 GHz	RBW: 1 MHz	VBW: 3 MHz	Detector: RMS	Sweeptime: 1ms per MHz

5.2.5 Test result

5.2.5.1 Measurement 9 kHz to 30 MHz

Note: Pre-measurements have shown, there are no detectable emissions in this frequency range.

5.2.5.2 Measurement 30 MHz to 960 MHz

Frequency (MHz)	Reading Vert. (dBµV)	Reading Hor. (dBµV)	Correct. Vert. (dB)	Correct. Hor. (dB)	Level Vert. (dBµV/m)	Level Hor. (dBµV/m)	Limit (dBµV/m)	Dlimit (dB)
150.00	-2.4	-3.1	13.9	14.8	11.5	11.7	43.5	-31.8
300.00	-1.6	0.1	16.9	16.5	15.3	16.6	46.0	-29.4
450.00	-2.0	0.2	21.2	20.9	19.2	21.1	46.0	-24.9
600.00	-3.1	-2.9	25.5	25.3	22.4	22.4	46.0	-23.6
750.00	-2.4	-2.4	28.3	27.7	25.9	25.3	46.0	-20.1
900.00	-1.8	-1.9	31.1	30.7	29.3	28.8	46.0	-16.7

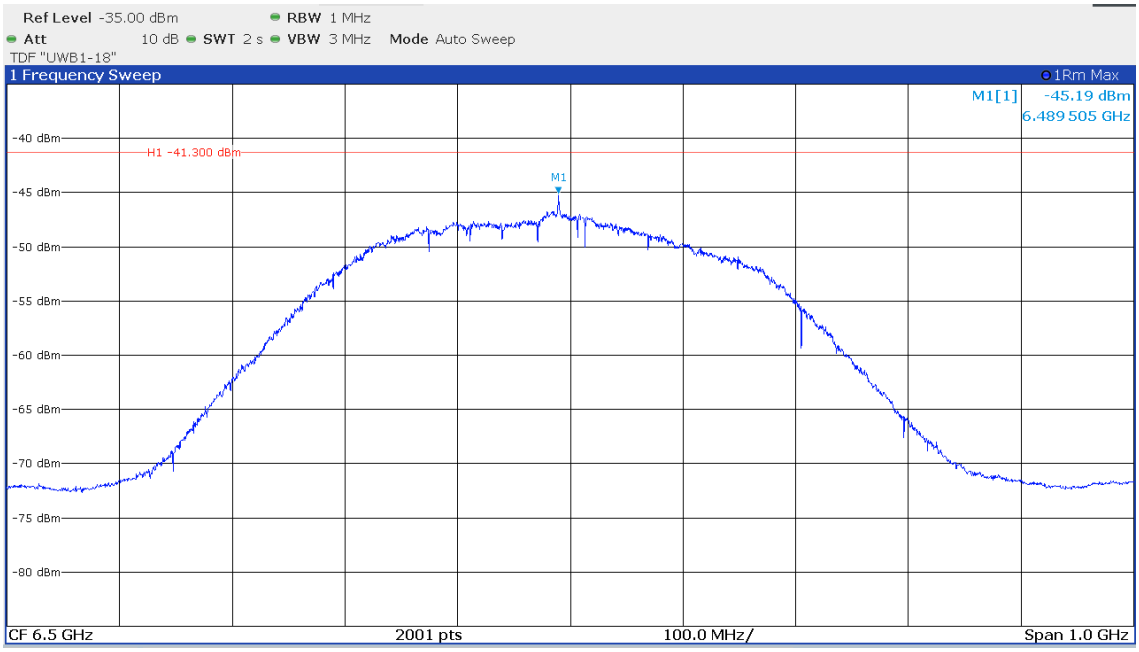
Note: Pre-measurements show that there is no significant emission of the EUT above the noise level in the frequency range from 30 MHz to 1000 MHz. All recorded values are ambient noise levels.

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

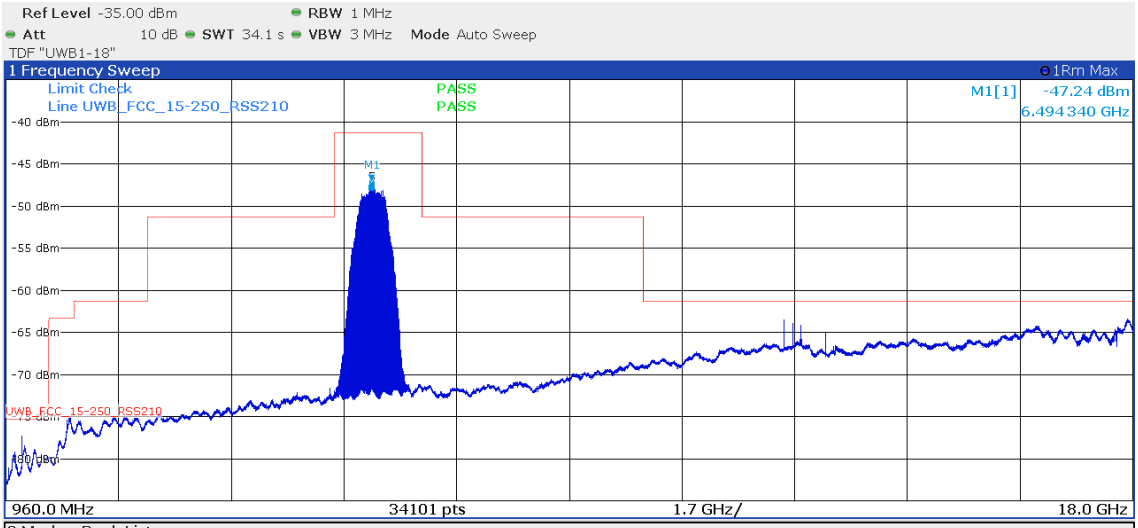
5.2.5.3 Measurement 960 MHz to 40 GHz

Channel 5

Mean Power



960 MHz to 18 GHz



2 Marker Peak List

No	X-Value	Y-Value	No	X-Value	Y-Value
1	6.474 350 GHz	-47.900 dBm	6	6.496 340 GHz	-47.808 dBm
2	6.479 350 GHz	-47.769 dBm	7	6.497 340 GHz	-47.354 dBm
3	6.485 840 GHz	-47.861 dBm	8	6.500 840 GHz	-47.943 dBm
4	6.490 840 GHz	-47.533 dBm	9	6.505 330 GHz	-47.438 dBm
5	6.494 340 GHz	-47.237 dBm	10	6.507 330 GHz	-47.842 dBm

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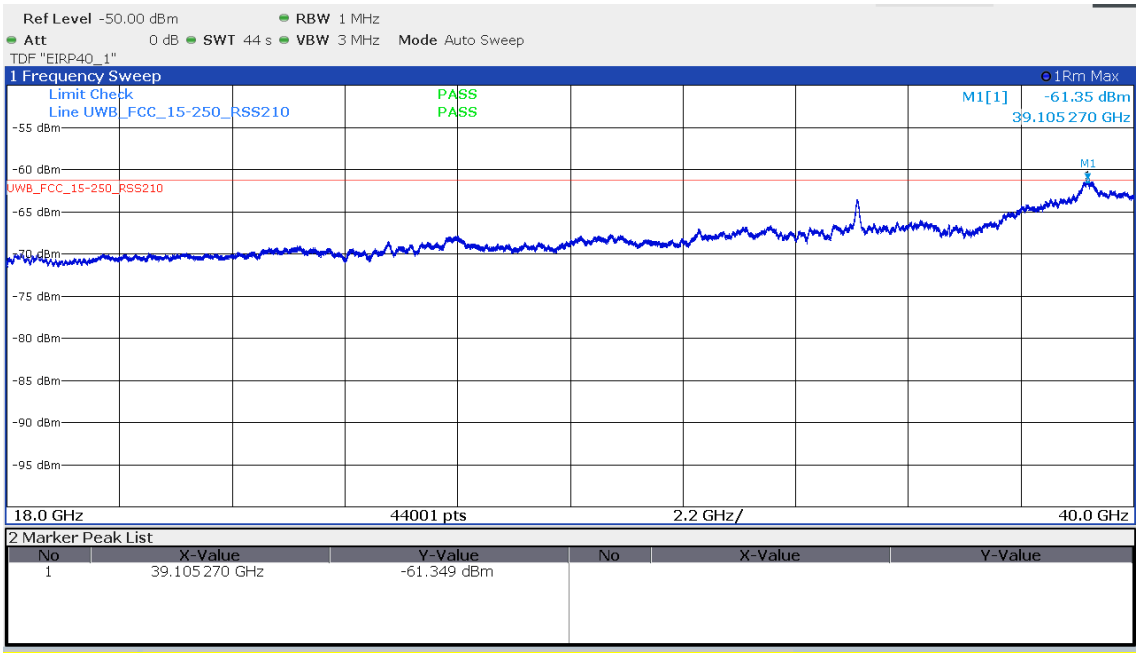
FCC ID: 2ALC5-KNX-HCTAG1 **IC: 25557KNX-HCTAG1**

18 GHz to 40 GHz



The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

FCC ID: 2ALC5-KNX-HCTAG1 **IC: 25557KNX-HCTAG1**

Limit according §15.209(a) in the frequency range 9 kHz 960 MHz:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

Limit according §15.250(d)(1) in the frequency range 960 MHz to 40 GHz:

Frequency in MHz	EIRP in dBm
960-1610	−75.3
1610-1990	−63.3
1990-3100	−61.3
3100-5925	-51.3
5925-7250	-41.3
7250-10600	−51.3
Above 10600	−61.3

Limit according RSS-210 K.3(a) in the frequency range 960 MHz to 40 GHz:

Frequency in MHz	EIRP in dBm
960-1610	−75.3
1610-1990	−63.3
1990-3100	−61.3
3100-5925	-51.3
5925-7250	-41.3
7250-10600	−51.3
Above 10600	−61.3

The requirements are **FULFILLED.**

Remarks: None.

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

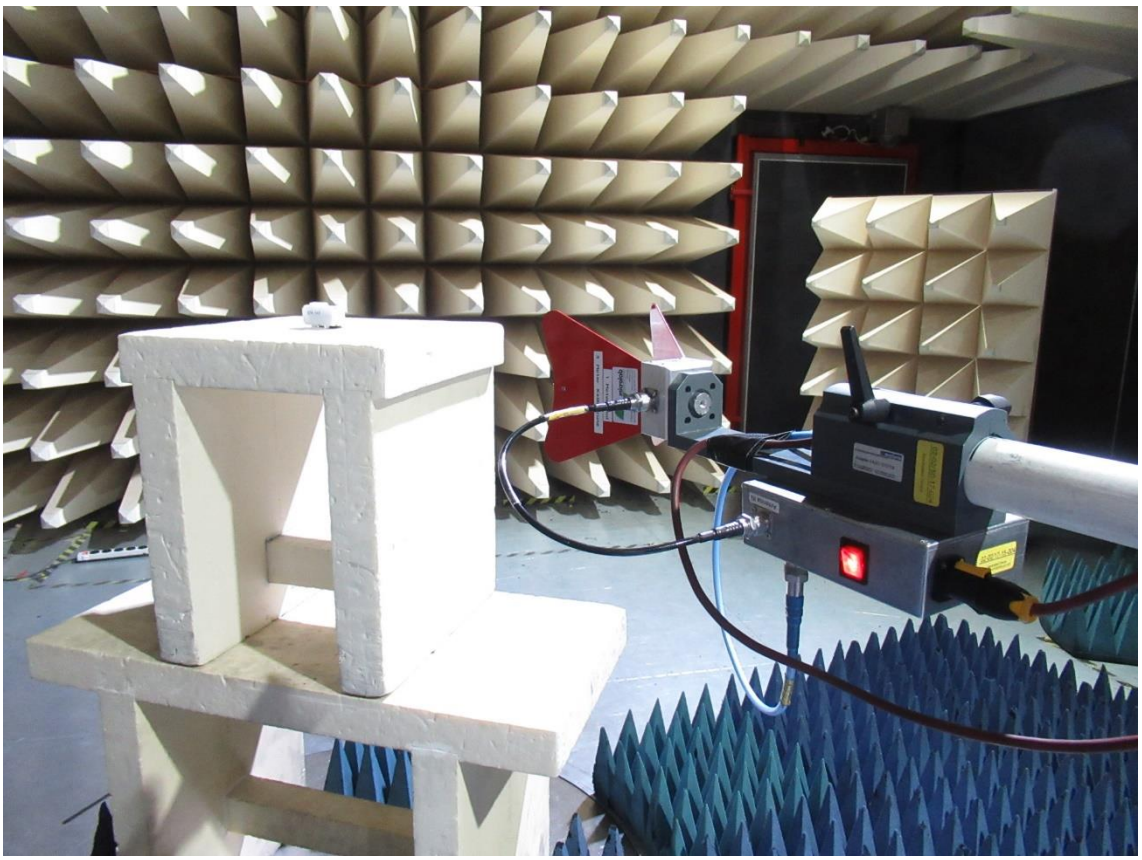
5.3 Radiated Emissions at 1164-1240 MHz and 1559-1610 MHz

For test instruments and accessories used see section 6 Part **SER 3**.

5.3.1 Description of the test location

Test location: Anechoic chamber 1

5.3.2 Photo documentation of the test set-up



5.3.3 Applicable standard

According to FCC Part 15, Section 15.250(d):
In addition to the radiated emission limits specified in the table in paragraph (d)(1) of this section, transmitters operating under the provisions of this section shall not exceed the following RMS average limits when measured using a resolution bandwidth of no less than 1 kHz

5.3.4 Analyser settings

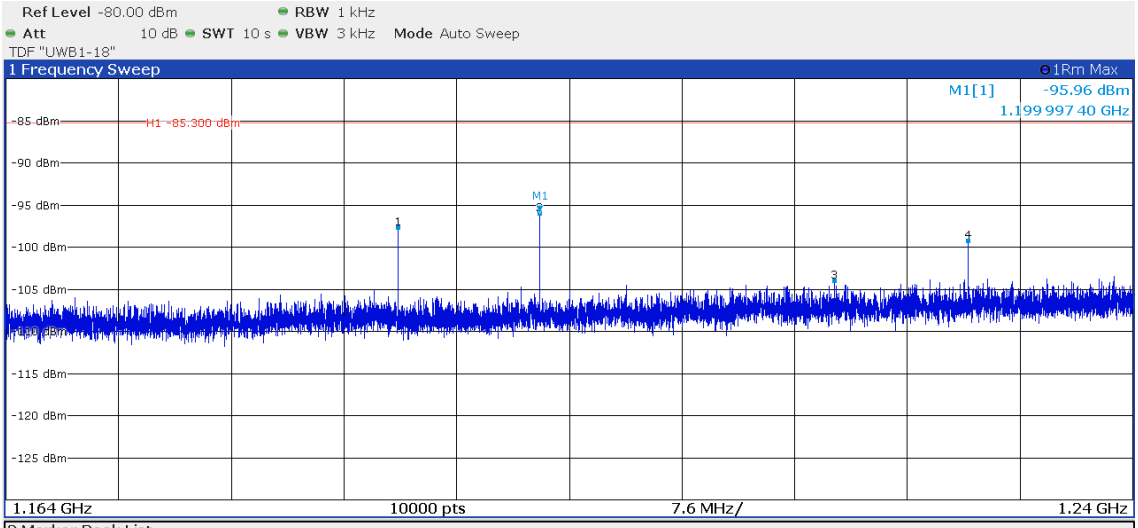
RBW: 1 kHz, VBW: 3 kHz, Detector: RMS, Sweep time: 1 ms/1kHz,

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

5.3.5 Test result

Channel 5 horizontal

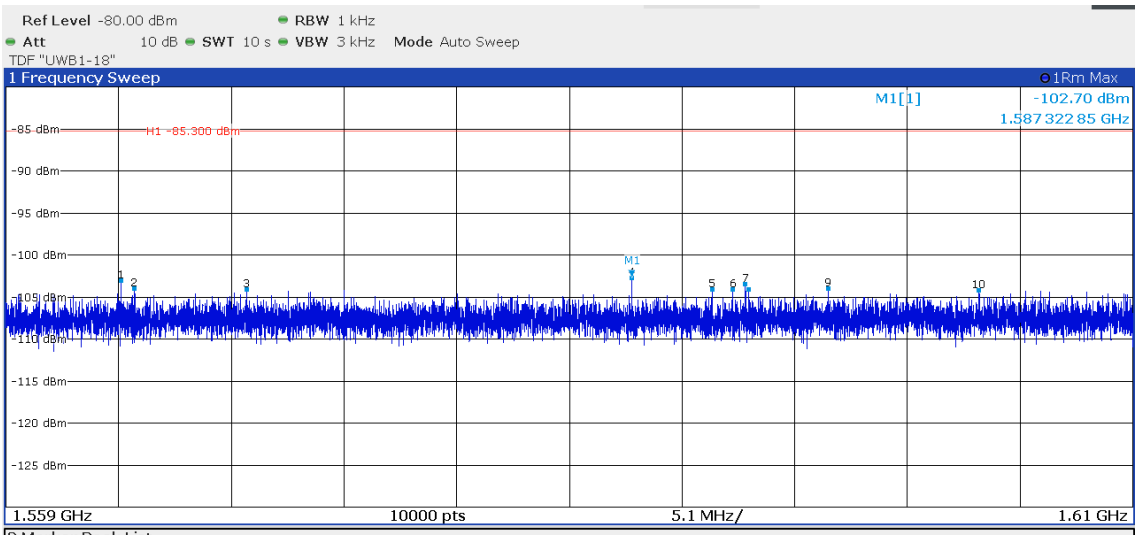
1164 MHz to 1240 MHz



2 Marker Peak List

No	X-Value	Y-Value	No	X-Value	Y-Value
1	1.190 467 GHz	-97.638 dBm	3	1.219 871 GHz	-104.032 dBm
2	1.199 997 GHz	-95.961 dBm	4	1.228 870 GHz	-99.273 dBm

1559 MHz to 1610 MHz



2 Marker Peak List

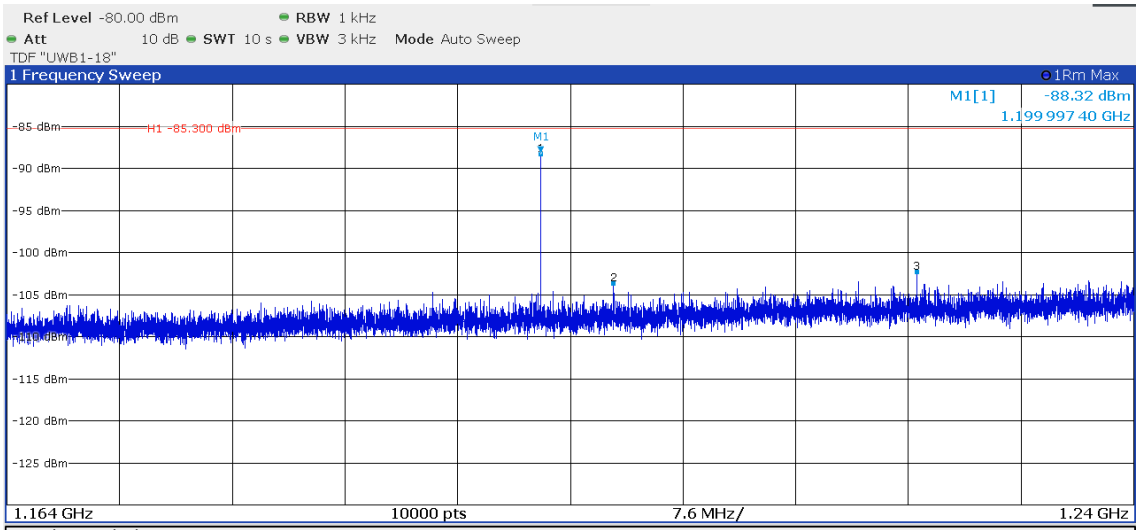
No	X-Value	Y-Value	No	X-Value	Y-Value
1	1.564 205 GHz	-103.028 dBm	6	1.591 903 GHz	-104.150 dBm
2	1.564 806 GHz	-103.987 dBm	7	1.592 459 GHz	-103.518 dBm
3	1.569 881 GHz	-104.115 dBm	8	1.592 617 GHz	-104.116 dBm
4	1.587 323 GHz	-102.703 dBm	9	1.596 212 GHz	-104.052 dBm
5	1.590 959 GHz	-104.066 dBm	10	1.603 016 GHz	-104.168 dBm

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

FCC ID: 2ALC5-KNX-HCTAG1 **IC: 25557KNX-HCTAG1**

Channel 5 vertical

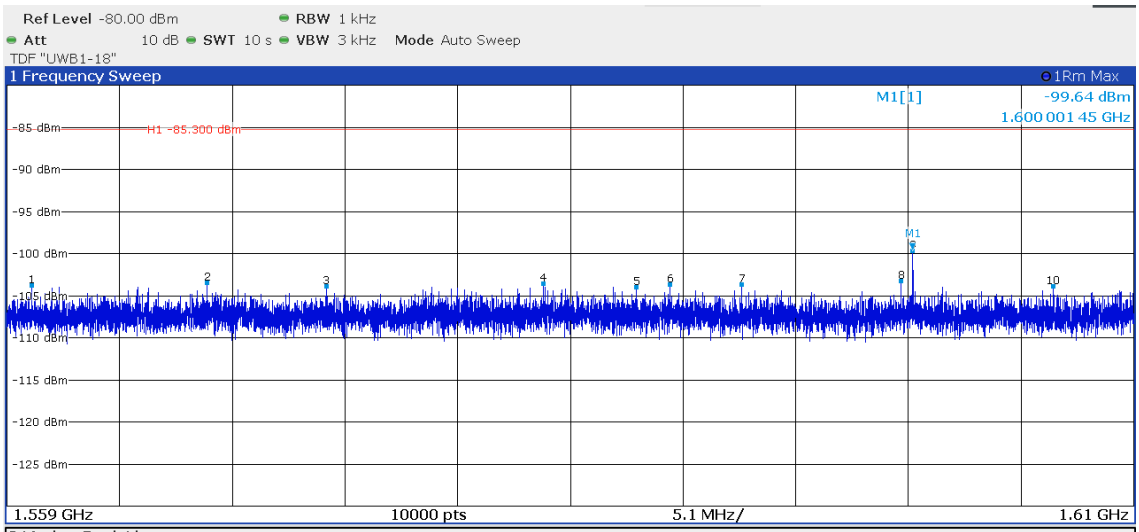
1164 MHz to 1240 MHz



2 Marker Peak List

No	X-Value	Y-Value	No	X-Value	Y-Value
1	1.199 997 GHz	-88.316 dBm	3	1.225 351 GHz	-102.332 dBm
2	1.204 922 GHz	-103.648 dBm			

1559 MHz to 1610 MHz



2 Marker Peak List

No	X-Value	Y-Value	No	X-Value	Y-Value
1	1.560 125 GHz	-103.824 dBm	6	1.589 021 GHz	-103.690 dBm
2	1.568 065 GHz	-103.497 dBm	7	1.592 270 GHz	-103.735 dBm
3	1.573 456 GHz	-103.887 dBm	8	1.599 476 GHz	-103.212 dBm
4	1.583 268 GHz	-103.624 dBm	9	1.600 002 GHz	-99.637 dBm
5	1.587 486 GHz	-103.954 dBm	10	1.606 341 GHz	-103.888 dBm

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

FCC ID: 2ALC5-KNX-HCTAG1 **IC: 25557KNX-HCTAG1**

Limit according §15.250(d) in the frequency

Frequency in MHz	EIRP in dBm
1164-1240	−85.3
1559-1610	−85.3

The requirements are **FULFILLED.**

Remarks: Tests are performed with sample 256443.

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

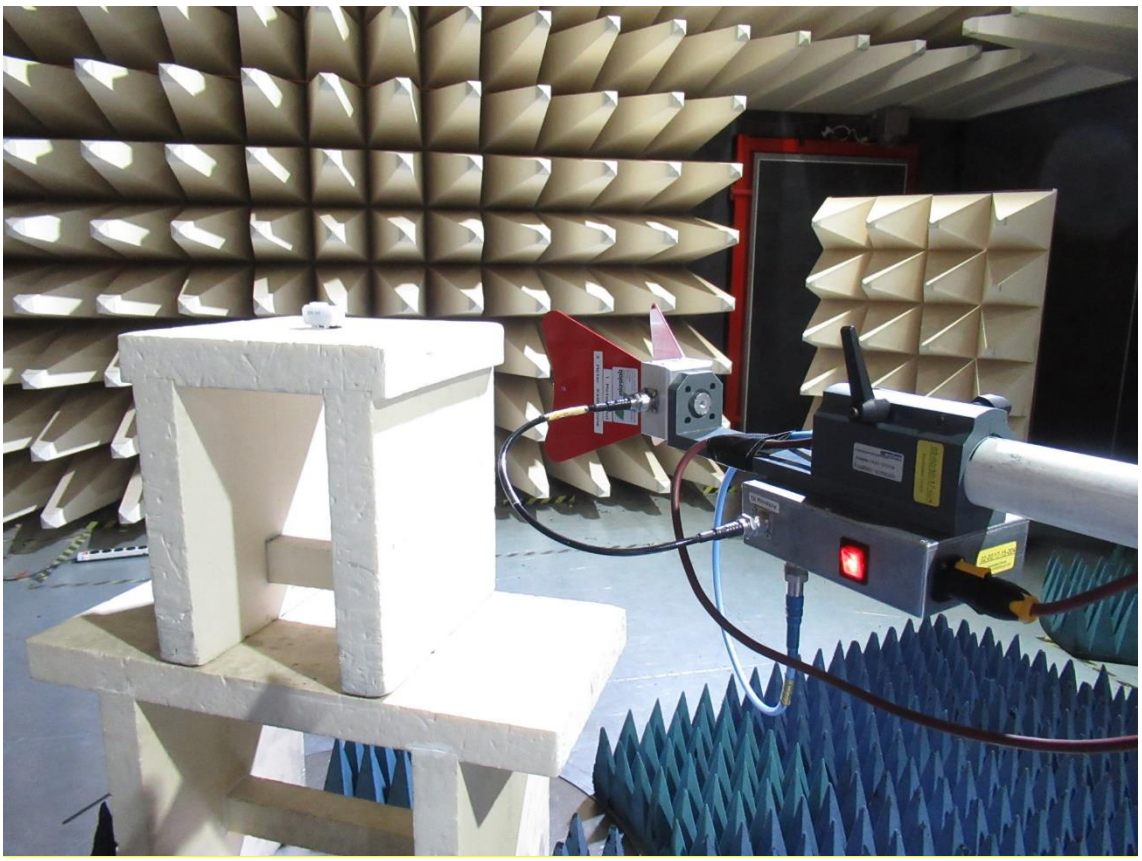
5.4 Peak Power radiated

For test instruments and accessories used see section 6 Part **CPR 3**.

5.4.1 Description of the test location

Test location: Anechoic chamber 1

5.4.2 Photo documentation of the test set-up



5.4.3 Applicable standard

According to FCC Part 15, Section 15.250(d)(3):
There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_M. That limit is 0 dBm EIRP. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures described in §15.521.

5.4.4 Analyser settings

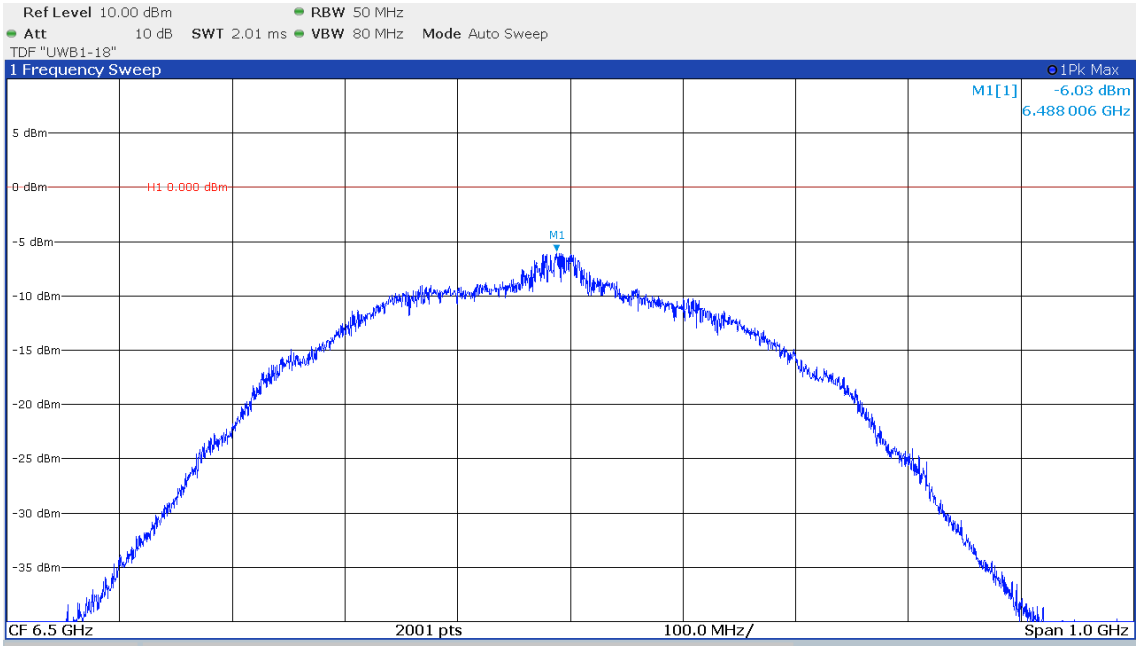
RBW: 50 MHz, VBW: 80 MHz, Detector: Peak, Trace Mode: Max hold

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

FCC ID: 2ALC5-KNX-HCTAG1 **IC: 25557KNX-HCTAG1**

5.4.5 Test result

Channel 5



Min. limit margin: -6.0 dB at 6.488 GHz

The requirements are **FULFILLED.**

Remarks: Tests are performed with sample 260919.

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
CPR 3	FSW43	02-02/11-21-001	16/05/2023	16/05/2022		
	AMF-6D-01002000-22-10P	02-02/17-15-004				
	3117	02-02/24-05-009	23/06/2023	23/06/2022		
	BAM 4.5-P	02-02/50-17-024				
	NCD	02-02/50-17-025				
	KK-SF106-2X11N-6,5M	02-02/50-18-016				
	BAT-EMC 3.21.0.24	02-02/68-13-001				
SER 2	ESVS 30	02-02/03-05-006	27/07/2023	27/07/2022		
	VULB 9168	02-02/24-05-005	20/12/2022	20/12/2021	03/07/2023	03/07/2022
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				
	50F-003 N 3 dB	02-02/50-21-010				
SER 3	FSW43	02-02/11-21-001	16/05/2023	16/05/2022		
	AMF-6D-01002000-22-10P	02-02/17-15-004				
	LNA-40-18004000-33-5P	02-02/17-20-002				
	3117	02-02/24-05-009	23/06/2023	23/06/2022		
	BBHA 9170	02-02/24-05-013	19/05/2023	19/05/2020	10/03/2023	10/03/2022
	BAM 4.5-P	02-02/50-17-024				
	NCD	02-02/50-17-025				
	KK-SF106-2X11N-6,5M	02-02/50-18-016				
	KMS116-GL140SE-KMS116-	02-02/50-20-026				
	BAT-EMC 3.21.0.24	02-02/68-13-001				

The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.